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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,943	11/19/2001	David C. Gerstenberger	22927-7030	3365

7590 10/02/2003

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EXAMINER
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LEE, JOHN D

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 10/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/042,943

Applicant(s)

GERSTENBERGER ET AL.

Examiner

John D. Lee

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply set forth above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is set forth above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this communication is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claim(s)

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the claim(s) 1 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 2-3 is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected. 24, 26-36, 38-51 and 53-56 is/are rejected.
- 7) ☒ Claim(s) 1 and 52 is/are objected to.
- 8) ☐ Claim(s) 2-3 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing filed on 19 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant's request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The claim is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See \_\_\_\_ for a detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of Allowance (PTO-892)
- 2) ☐ Notice of Appeal (PTO-948)
- 3) ☐ Information Sheet (PTO-1449) Paper No(s) \_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

The disclosure is objected to because of the following informalities: on page 1, the Serial Numbers of the two co-pending United States Applications must be inserted in the blank spaces. Appropriate correction is required.

It is also not clear if priority under 35 U.S.C. § 120 is being claimed based on either or both of these co-pending United States Applications. It appears that applicant is claiming priority under 35 U.S.C. § 119(e) based on provisional applications, but because of the apparent interrelationships between all of the prior filed applications, the exact claim for priority is not clear. Clarification of this issue is required.

The drawings filed with this application on November 19, 2001, are objected to as being informal and unsuitable for publication (although they are acceptable for examination purposes). Most of the numerals are hand-drawn and non-uniform, and some of the straight lines are not straight (example: the right-most portion of Figure 9). Acceptable drawings are required in response to this Office action. The drawing requirement will not be held in abeyance.

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 26, 51, and 54-56 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 26, lines 1-2, the term "the active laser beam" lacks correct antecedent support because of the word "active". The claim is thus indefinite. In claim 51, the term "the CLBO crystal" lacks antecedent support and the claim is, accordingly, indefinite. It is believed that claim 51 should

depend from claim 40 rather than from claim 39. Claims 54-56 are each indefinite because they refer to the "apparatus" of claim 53, when claim 53 defines a "method".

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 151(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 18, 19, 27-32, 36, 40, 46, 51, and 53 are rejected under 35 U.S.C. § 102(e) as being clearly anticipated by United States Patent Application Publication 2003/0000000 to Arbore et al. This reference is applied as having an effective filing date of August 10, 2001. If applicant clarifies the priority situation (above), and if applicant is entitled to an earlier filing date, Arbore et al may have to be removed as a reference. Arbore et al discloses an apparatus for producing a diffraction pattern in an optical fiber which comprises laser means (Yb-doped, Q-switched solid-state laser or Pulsed fiber laser), second harmonic generating means, fourth harmonic generating means and means for using the fourth harmonic beam to produce the diffraction pattern in the optical fiber. The Arbore et al solid-state laser operates at *approximately* 946 nm,

and the generated fourth harmonic has a wavelength between 240 and 250 nm. The quadrupler crystal (fourth harmonic generating means) used therein can be a noncritically phase-matched CLBO crystal.

Claims 8-13, 15-17, 20-24, 26, 33-35, 38, 39, 41-45, 47-50, and 54-56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent Application Publication 2003/0031411 to Arbore et al. Arbore et al does not disclose the use of a doped garnet crystal as the active laser means, but clearly any solid-state laser crystal that operates at *approximately* 946 nm could be used. The use of a doped garnet crystal in Arbore et al would thus have been obvious. Although diode lasers are used in the reference, a diode bar arrangement (IBC) is not shown. This would have been an obvious embodiment of the diode lasers, however, for a person of ordinary skill in the art, as would be specific types of single diode lasers (VCSEL's and InGaAs diodes). The important parameter (which is also apparent in Arbore et al) is the operating wavelength range (*approximately* 946 nm). There is also no disclosed means for minimizing beam walkoff, but this is a well-known technique in the optical wavelength conversion art and would certainly have been an obvious addition in Arbore et al. The laser in the reference device appears to always be positioned outside the resonant cavities. It would have been obvious, however, and in keeping with established knowledge in the art, to have (in Arbore et al) a resonant cavity containing both the laser means and the second harmonic generating means, or to have two resonant cavities, one containing the laser means and the other containing the second harmonic generating means. The pulse rates and pulse widths of the laser pulses used

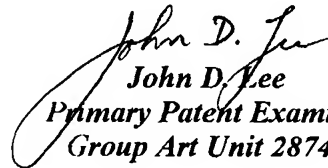
in Arbore et al are not specified, but it is stated that these would be appropriately determined by the person of ordinary skill in the art (paragraph **[0067]**). The peak power of the generated fourth harmonic beam pulses therein is as much as 500 watts (paragraph **[0059]**), which is obviously very close to applicant's claimed range.

Claims 14, 25, 37, and 52 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Arbore et al, the closest prior art comparison, does not disclose or suggest the specific multiple resonator arrangements of the claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Other teachings of forming gratings by means of generated fourth harmonic laser beams can be found in Terasawa et al, Matsumoto et al, Napier et al, and others.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the examiner presumes that the subject matter of the claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. §§ 102(b) or (g) prior art under 35 U.S.C. § 103(a).

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-332.

  
**John D. Lee**  
**Primary Patent Examiner**  
**Group Art Unit 2874**